

Management & Data Systems

*Lockheed Martin
Management & Data Systems
San Jose, CA*

*DARPA Data in the Optical Domain Workshop
March 18, 2003*

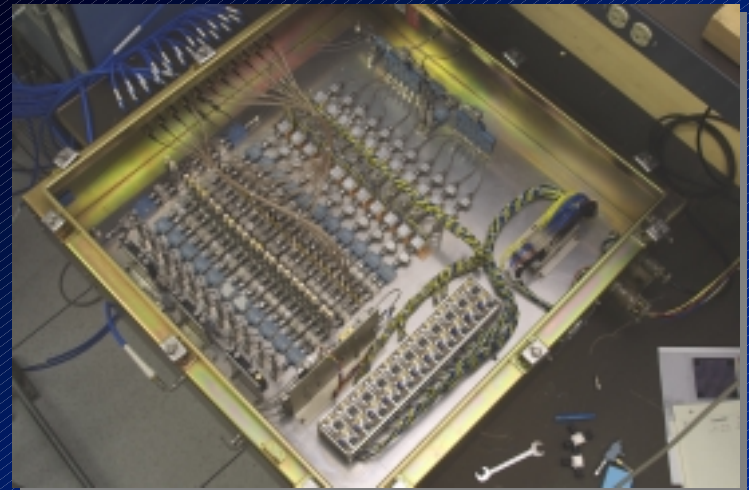
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LM M&DS Heritage Capabilities

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- Decades of high data rate communication hardware development & systems integration experience
 - Multi-Gbps satellite ground terminals since 1975
 - Largest packet-switched (Gig-E) network in the world
- Emerging 'Center of Excellence' for Optical Comms
 - Optical group filed 10 patents, 3 granted
 - IP was the basis for 2 commercial spin-offs:
 - Terra Wave Optical Networks (TeON; 2001)
 - Centerpoint Broadband Technologies (1999)
 - Raised > \$200 M in venture capital

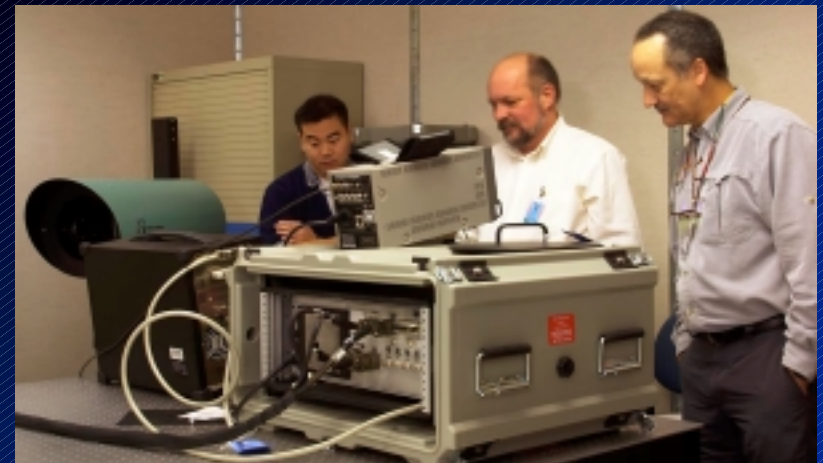
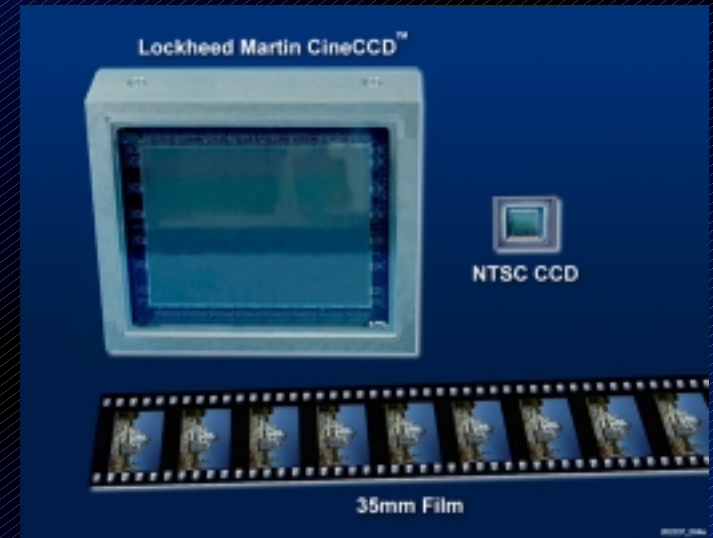


LM M&DS Optical Programs

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- Lockheed Martin M&DS is a provider of optical solutions from the device-level to the system-of-system levels:
 - Multi-Gbps fiber-optic links
 - Novel optical devices
 - Free-space optical communications
 - High speed, high resolution imaging systems
 - All-optical network (AON) architectures & applications



Optical Facilities

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- **Fiber-Optics Lab**

- \$1 million invested to date
- 2,800 km of various fiber types
- High speed electro-optic hardware and test equipment



- **Free Space Optical Lab**

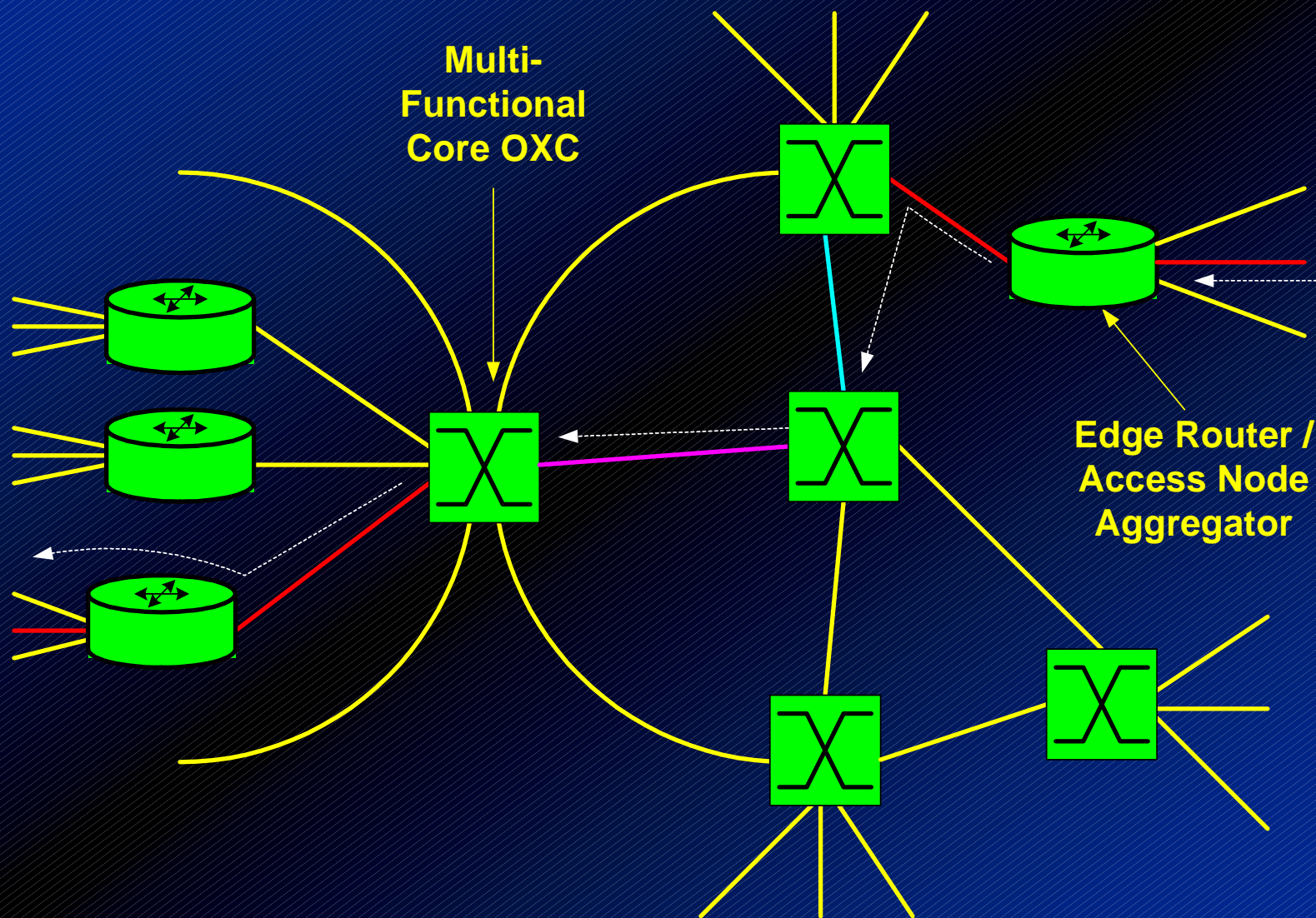
- Isolated optical benches
- Microwave wafer probe equipment
- Optical wafer free-space testing
- High performance radiometer



AON Enabling Technologies

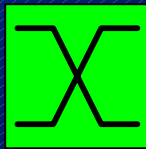
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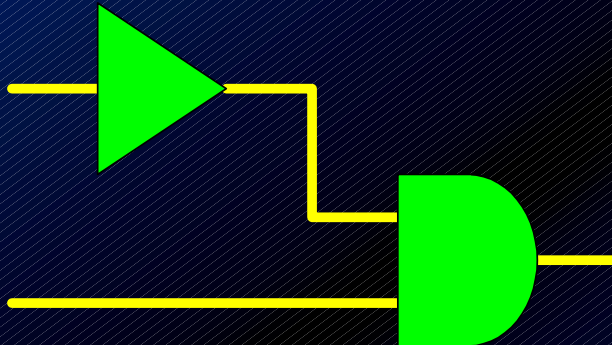
AON Enabling Technologies, cont.

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- Within each router/cross-connect:

- 3R regeneration
- Wavelength conversion
- WADM
- Optical buffers



- Other elements of interest:

- Protection switch
- All-optical control plane
- Optical logic
- Optical processing/computing

- *Lockheed Martin M&DS is currently researching each of these technologies and their applicability to deployable systems*